A Work Project, presented as part of the requirements for the Award of a Masters Degree in Economics from the NOVA – School of Business and Economics.

RELATIONSHIP BETWEEN NATIONAL CULTURE, DEMOCRACY AND ENVIRONMENTAL PERFORMANCE: A PANEL DATA ANALYSIS

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A Project carried out on the Sustainable Growth course,
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7th January 2015

Abstract: This paper demonstrates the significance of culture in examining the relationship between democratic capital and environmental performance. The aim is to examine the relationship among scores on the Environmental Performance Index and the two dimensions of cross cultural variation suggested by Ronald Inglehart and Christian Welzel. Significant multidimensional interrelationships among democracy, cultural and environmental sustainability measures could be found, following the regression results. Firstly, higher levels of democratic capital stock are associated with better environmental performance Secondly; the importance to distinguish between cultural groups could be confirmed.

1. Introduction

During the 1990s environmental economists, sociologists, and political scientists, started paying attention to the impact of fundamental political institutions on environmental performance. The first results indicated that democratic forms of government improved environmental quality (Congleton, 1992). Continuing research largely confirmed this view but with some exceptions (Midlarksy 1998, Barrett and Graddy 2000). This work is part of a large and growing interest in the effects of political institutions on economic outcomes and environmental well being also taking into account the cultural dimension of countries. A great motivation and inspiration for the chosen methodology has been recent research on the topic, presented by Per G. Fredriksson and Eric Neumayer (2013). The authors examine whether Democratic experience is important for implementing Climate Change Policies. They claim that it is the countries' historical experience with democracy, called the democratic capital stock, rather than current levels of democracy that determines current climate change policies. Empirical evidence using data starting in the year 1800 suggests that the democratic capital stock has an important and robust effect on climate change policies. However, the study does not account for the effect of different cultures. In this context it can be reasonably conjectured that the will and ability to protect the environment are influenced by intra-country socio-cultural factors. Consequently, if people are more culturally conscious of environmental conditions, a higher level of environmental sustainability can be

maintained. In this scenario, national culture is expected to influence how people utilize their natural resources and environments by shaping their attitudes and perceptions. Herein lays the importance of empirically determining the significance of national culture on environmental conditions. Furthermore, it is questionable if democratic capital stock since 1800 has an impact on today's environmental performance. This study accounts for democratic capital starting in 1987. The main reason to use this year as a cut off point is the publication of the Brundtland Commission report, which introduced a critical new dimension of economic growth by raising the issue of sustainable development.

Though democratic capital was estimated since 1987, it is important to keep in mind that a pervasive problem in comparing regime performance internationally occurs: The "information gap" (Srebotnjak (2007)). The amount and quality of environmental data available is much greater in developed countries. Furthermore, it was not possible to find an adequate environmental index, counting back to 1987. Nevertheless, the purpose of the present paper is to provide some modest first steps in the search for greater understanding of the link between elements of democracy, culture and environmental sustainability. To the best of my knowledge, this is the first paper to demonstrate an overall relationship between estimated democratic capital, environmental performance and national culture. The remainder of this report is organized as follows. In section 2 the literature review is provided. In section 3, chosen regression models and the data set are presented. Following this, section 4 gives an overview about selected determinants of environmental performance. Estimation results are discussed in section 5 and the robustness analysis is outlined in section 6. Finally, section 7 offers a short conclusion. In the appendix (I) figures (II) regression tables and (III) descriptive statistics and are provided.

2. Literature Review

The relation between democratic institutions and environment quality though still in its infancy, is burgeoning and recent articles help to paint an imposing landscape. Some authors

conclude that democratic institutions favour environment protection whereas others find negative effects.

Regarding the first approach, Payne (1995) argues that the population in democratic countries has free access to information about environment quality. Furthermore, democracy provides the freedom of expressing preferences and puts pressure on governments. Due to a greater freedom in media, citizens are more aware of environmental problems and create lobbying groups (freedom of association). Because of the right to vote, political leaders are prompted to implement environmental policies at national and international els. McCloskey (1983) and Payne (1995) emphasize the ability of democratic economies to satisfy people's environmental preferences and their commitment regarding international negotiations and agreements. Economics models (Page and Shapiro (1983)), linking public and political decisions, suggest that if the population is well informed about major problems, the latter are widely influenced. In autocratic regimes, information provision is weak which means that the populations cannot create lobbying groups.

Deacon (1999) and Olson (1993) argue that political freedom is supporting environmental protection. This is because autocratic regimes tend to under provide environment as a public good since the political elites monopolize and hold large shares of national incomes and revenues. The implementation of environmental policies could lower levels of production, income and consumption, which would impose higher costs on the elite in an autocracy than on the population. According to Acemoglu and Robinson (2006), the majority of citizens have the right to vote and the government is supposed to represent voters' preferences in economic policies. As preferences of median voter are important in democratic elections and its marginal cost of implementation of environmental policies is lower than autocratic leaders, the adoption and implementation of environmental policies will prevail in democratic countries. Congleton (1992) analyses the effect of political regimes on environmental policies. He assumes that a short temporal horizon contributes to a weak regulation of environmental policies. As the consequences of environment degradation ap-

pear on the long term, political leaders can behave short sighted and underprovide environment.

On the other hand, literature suggests that democracy does not favour environment protection. Desai (1989) finds that democracy doesn't increase environmental performance because democracy represents a factor of economic growth and prosperity, which decreases environmental quality. Democracy is also correlated with factors such as property rights and social infrastructures that boost economic growth. In this context, Hardin (1968) is concerned about the management and overexploitation of environmental and natural resources since property rights are not well defined. Secondly, Paehlke (1996) claims that environment is a global phenomenon whereas democracy works on national and local levels. Consequently, environmental problems could not be solved in an adequate way. Heilbronner (1974) supports the idea that global growth of population threatens environmental quality and that autocratic countries can restrain demographic dynamic while democratic countries respect peoples´ freedoms. Moreover, Dryzek (1987) states that democracies are economic markets in which lobbying groups are very important. Accordingly, multinational companies may have less incentive to introduce strict environmental policies in countries in which political leaders are influenced by lobbying groups. In this context, Olson (1982) and Midlarksy (1998) claim that lobbying groups are partially responsible for a certain rigidity of institutions in mature democracies. In other words, the supply of public goods could be reduced by an important number of lobbying groups, which are less or not incited to take care of society interests.

Besides, there are studies, which discussed and theorized the link between national culture and environmental conditions. In this context, Tang and Koveos (2008) have found that economically disadvantaged countries place higher value on economic and physical security, and developed countries place higher value on nonmaterial needs like freedom, self-expression, and quality of life (Inglehart & Abramson, 1994; Leung, 2006). Cohen and Nelson (1994) claim that the link between culture and the environment must be through the impact of culture on normative ethical beliefs in terms of morally correct behaviour. These

beliefs are reflected in common business practices, government regulation of business activity. This suggests that the perception of environmentally responsible behaviour can be significantly different across countries. Similarly, Gorham (1997) argued that cultural factors operate at various levels: through the policies of sovereign states, the public and private agencies that serve the policies, and the public officials who are directly responsible for how the policies are carried out. This view is consistent with Elgin (1994), who suggested that it may not be possible to make any material changes required to achieve environmental sustainability if it is not possible to reach beneath physical challenges and confront problems at a much deeper level in culture and consciousness.

3. Empirical Analysis

3.1. Regression Model

The purpose of this research work is to analyse (1) whether a higher democratic capital stock, accumulated since 1987 raises the success of environmental performance and also (2) if environmental performance is influenced by cultural differences. For this purpose, balanced panel data was used which means that all individual units are observed in all time periods $T_i = T$ for all i. Panel data are repeated measurements at different points in time on the same individual unit, person, firm, state, or country. Regressions can then capture both variation over units, similar to regression on cross-section data, and variation over time. In the scope of this work methods for a short panel are used, meaning data on many individual units (countries) and few time periods (1987-2010). The regression procedure follows three steps. In the first step, the dependent variable Environmental Performance Index (EPI) is estimated on Democratic Capital and a set of control variables. The set of standard control variables is urban population (% of total), CO2 emissions (metric tons per capita), electric power consumption (kWh per capita) and current democracy.

In the first step of the estimation two models are used: 1) Individual-effects model (GLS regression) and 2) Fixed effects model. The first model can be stated as follows:

$$y_{it} = a_i + x'_{it}\beta + \varepsilon_{it} \quad (1)$$

where x_{it} are regressors, a_i; are random individual-specific effects, and ε_{it} is an idiosyncratic error.

In the second model, the fixed effects model (FE), the a_i from equation (1) is permitted to be correlated with regressors x_{it}. This allows a limited form of endogeneity. In this case, the estimated model is given by

$$y_{it} = a_i + x'_{it}\beta + u_{it}, \quad \text{where} \quad u_{it} = a_i + \varepsilon_{it} \quad (2)$$

Hence, regressors (x_{it}) are permitted to correlate with the time invariant component of the error (a_i) while it is assumed that x_{it} is uncorrelated with the idiosyncratic error (ε_{it}). In equation (1) and (2), y_{it}, the dependent variable, is the Environmental Performance Index in country i at year t, x_{it} is the vector of control variables where democratic capital is the variable of main interest. The time period is from 1987 to 2010 and the sample is made of 160 countries (3840 observations).

In equation (2) a_i are time invariant components of the error because it is assumed that they are fixed over time (fixed effects).

The purpose of the second step of the estimation is to provide a better understanding of the statistical relationship between elements of culture, democracy and environmental sustainability. In this regard, the individual-effects-model was sorted into nine different cultures and further control variables were introduced.

In the final step, two kinds of robustness analysis were conducted. Firstly, further control variables were included to test the significance of democratic capital on environmental performance, namely governance readiness, rule of law, female school enrolment and the number of cars in the population measured in thousands. Secondly, a regression with interaction terms between dummy variables for each culture and democratic capital was performed to catch the pure effect of democratic capital on environmental performance in different cultures. Throughout this work regressions are performed with robust standard errors.

3.2. Data Set

To link environmental performance, democratic capital and cultural differences, it was necessary to compile an appropriate data set. The time period under study is 1987-2010 for 160 developed and developing countries while the time period of estimation is reduced to 2000-2010 for 125 countries. This is because of the limited availability of the Environmental Performance Index. However, democratic capital has been estimated since 1987 for all countries and equally for all cultures. Therefore, all regressions were performed from 2000 to 2010 with a democratic capital stock estimated for all countries from 1987 to 2010 to capture democratic experience since the publication of the Brundtland Commission report. A summary of descriptive statistics describing the data is provided in the appendix. Urban population (% of total) refers to people living in urban areas as defined by national statistical offices. It is calculated using World Bank population estimates and urban ratios from the United Nations World Urbanization Prospects. Foreign direct investment are the net inflows of investment to acquire a lasting management interest in an enterprise operating in an economy other than that of the investors, obtained from World Bank World Development Indicators. The control variables Gross Net Income (GNI) per capita growth (annual %), CO2 emissions (metric tons per capita) and Electric power consumption (kWh per capita) were collected from World Development Indicators (2014) as well. The measures for democratic institutions (polity2 and Democratic Capital) were obtained from Polity IV Project (2013). Polity data series is a widely used data series in political science research and contains coded annual information on the level of democracy for all independent states with a population greater than 500,000, covering the years from 1800–2013. To control for current democracy, the index of polity2 is chosen. The Polity 2 index subtracts autocracy scores from democracy scores, and also fixes standardized scores, to create a composite index of the political regime suitable for time series analysis with values ranging from +10 (strongly democratic) to -10 (strongly autocratic).

4. Determinants of environmental performance

4.1. Environmental Performance Index (EPI)

The World Commission on Environment and Development (1987), also known as the Brundtland Commission, defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". Since the 1992 Earth Summit, the purpose of much of the work on environmental policy has been to refine and make operational this notion of sustainability. To this end, the Environmental Sustainability Index (ESI) was developed by the joint efforts of World Economic Forum's Global Leaders for Tomorrow (GLT) Environmental Task Force, the Yale Center for Environmental Law and Policy (YCELP), and the Columbia University Center for International Earth Science Information Network (CIESIN) (Global Leaders of Tomorrow, 2001). It has been used in recent studies, such as in Esty and Porter (2005), Li and Reuveny (2006), and Fredicksson and Wollscheid (2007). For the purpose of this work the Environmental Performance Index (EPI) is used as the dependent variable, which is the follow-up model of the ESI. This index quantifies the environmental performance of a state's policies, ranking how well countries perform on high-priority environmental issues in two broad policy areas: protection of human health from environmental harm and protection of ecosystems since the year 2000. Calculating and aggregating 20 indicators that reflect national-level environmental data construct the components of EPI. The first major component of the EPI indicator framework are two measurable objectives: (1) Environmental Health - reducing environmental stresses on human health, and (2) Ecosystem Vitality - promoting ecosystem vitality and sound natural resource management. Underlying this, core categories were defined which are the types of categories that reflect facets of its measurable objectives. The 2010 and 2012 EPIs include 10 core categories: environmental health, air quality (human health effects), water quality (human health effects), agriculture, biodiversity and habitat, forestry, air quality (ecosystem effects), water quantity, climate change and energy. The third component of the indicator framework includes 22 indicators—quantitative variables

measured from observations (i.e., raw data) or calculated. In order to have a more detailed picture of the components of the indicator, an overview can be found in the appendix.

4.2. Control Variables

Democratic Capital

The control variable of main interest is democratic capital building on the Polity 2 variable from the Polity IV data set (Marshall and Jaggers, 2007). Following Fredriksson and Neumayer (2013), two different measures of Democratic Capital were created, using different cut-offs to define democracy versus autocracy. Polity2 takes values between −10 (strict autocracy) and 10 (full democracy). Persson and Tabellini (2009) defined democracies as countries having a positive Polity 2 score. As a stricter alternative, countries having a Polity 2 score above 5 are seen as democracies or full democracies. This is because countries below this threshold (but above −5) are usually categorized as "Anocracies", combining characteristics from both democratic and autocratic regimes (Plümper and Neumayer, 2010). The control for current democracy is simply the Polity 2 value for each year from 1987 until 2010. In this study, domestic democratic capital is denoted by $z_{i,t}$ while it is assumed to accumulate over time because members of society gradually gain experience with democracy. To define democratic capital it is necessary to specify how a particular historical path in country i up to year t, $\{a_{i,t-\tau}\}_{\tau=0}^{\tau=t0}$ leads to a value of $z_{i,t}$. The assumption is that democratic capital accumulates in years of democracy, and depreciates at the rate $(1 - \delta)$. On the other hand, in years of autocracy: $z_{i,t} = (1 - \alpha_{i,t-\tau})\delta^{\tau-1}$.

Therefore, the equation used to estimate democratic capital (assuming $z_{i,t0} = 0$) can be presented as follows:

$$z(\delta)_{i,t} = (1-\delta)\sum_{\tau=0}^{\tau=t_0}(1 - a_{i,t-\tau})\delta^{\tau-1} \qquad (3)$$

In the case of the presented study t_o = 1987. The expression $z(\delta)$ is used to emphasize the dependence on the depreciation rate and multiplied with $(1 - \delta) = 0.06$, following Persson and Tabellini. Thus, democratic experience is more valuable, the closer it is to the present.

Capita Carbon Emission

Per capita CO2 consumption from World Bank (2014) reflects consumers' incentive to keep fossil fuel prices low as well as the fossil fuel producers' lobbying incentive to keep environmental policies weak. This variable thus reflects the amount at stake for CO2 emitters, and thus their lobbying incentives, following Fredriksson and Neumayer (2013).

Urban Population Total

By 2030, the world's urban population will increase by another 2 billion. However, the extent and impact of such rapid urbanization have received relatively little scientific study. Furthermore, urbanization can be seen as an evidence for economic growth in developing countries, which causes more industrial activities, higher energy consumption and potentially more emissions.

Electric power consumption (kWh)

Electric consumption reflects an indicator for environmental growth. Defined by the World Bank Development Indicators (2014), it measures the production of power plants and combined heat and power plants less transmission, distribution, and transformation losses and own use by heat and power plants.

Trade of GDP (in %)

Trade of GDP (in %) is taken from World Bank (2014) and is the sum of exports and imports of goods and services measured as a share of gross domestic product. Literature provides contrary evidence on the relationship between trade and its effects on the environment. The debate is typically divided between the so-called optimists and pessimists who believe that trade, as a driver of economic growth is either good or bad for the environment

Foreign direct investment, net inflows (% of GDP)

Foreign direct investment are the net inflows of investment to acquire a lasting management interest in an enterprise operating in an economy other than that of the investor. This variable shows net inflows in an economy from foreign investors, and is divided by GDP. In this context, numerous studies employing econometric development started to appear from

the early 1970s and investigate the relationship between FDI, productivity and environmentally sound technologies (leakage effects).

Gross Net Income (GNI) per capita growth (annual %)

Following the World Bank Development Indicators (2014), annual percentage growth rate of GNI per capita based on constant local currency. GNI per capita is gross national income divided by midyear population. This variable is important to control for a change in socioeconomic culture. With increasing income, a shift from survival values to self-expression values takes place in the post-industrial phase of modernization. This stands for increasing emancipation *from* authority. Rising self-expression values transform modernization into a process of human development that increases human freedom and choice. Consequently, the *inherently emancipative nature of self-expression values makes democracy increasingly likely* to emerge. Thus, modernisation brings cultural changes that can lead to emerge of democratic institutions. The growth of human autonomy is the theme underlying the process of modernization, rising self-expression values and democratisation.

5. Estimation Results

5.1. Results for Models (1) and (2)

The primary concern of the first model is to present the impact of two different democratic capital stocks on the environmental performance index (EPI). DemCap0 is used in the first and second regressions and DemCap5 in the third and forth one. Table one presents the estimation results.

(Table 1)

DemCap5 is the stricter measure of democratic capital, as explained earlier and has a stronger impact on EPI than the weaker estimate. It represents a "higher quality" of political institutions because it only counts for Democratic Capital in Democracies and Full Democracies while Demcao0 also includes "Open Anocracies". Coefficients show a higher impact on the EPI if countries have a stricter democratic political system. These results are similar to Gleditsch & Sverdrup (2003), Li & Reveuny (2006) and Bernauer & Koubi (2009) who con-

clude that democratic institutions improve environmental quality. In column 3) and 4) country fixed effects were introduced (equation (2)). Democratic capital remains highly significant at 1% and affects the EPI positively, with slightly smaller coefficients. Just like in the first regression, DemCap5 has a stronger impact on EPI than DemCap0 in the fixed effect model. Furthermore, urban population (% of total) affects the EPI positively in both models. This result has a very important policy implication: once urbanization reaches a certain level, the effect on emissions turn out to be negative, contributing to reduced environmental damage. An increase in CO2 emissions has a significant negative effect on EPI. The coefficient of DemCap0 regression is smaller which means that an increase in CO2 emissions has a smaller impact on environmental performance if the country is a Full Democracy. Democratic governments could have a stronger interest in clean energies and provide more policies to compensate for emissions. Furthermore, consumers in high-developed countries have a different awareness of climate change due to better education and the willingness to pay for emission friendly products, which could outweigh increasing CO2 emissions. A further control variable is Electric power consumption (kWh per capita), which can be seen as a proxy for economic development. However, the relationship between economic growth and environmental quality has been a source of great controversy. At one extreme there is the view that greater economic activity inevitably leads to environmental degradation and at the other extreme is the view that those environmental problems will be addressed "automatically" as a consequence of economic growth which is align with the hypothesis of the environmental Kuznets Curve.[1] Since the positive effect is larger if DemCap5 is used, energy is cleaner or abating policies are more efficient if countries are fully democratic. Besides economic growth, population growth can be another reason for increasing electricity consumption. Current democracy has a positive impact on Environmental Performance; however, the coefficient is around 6 times smaller than the one of democratic capital. This shows that an increase in democratic capital, which can be seen as democratic experience, has a stronger in-

[1] Environmental Kuznets Curve (EKC) hypothesis: In the early stages of economic development environmental degradation will increase until a certain level of income is reached (known as the turning point) and then environmental improvement will occur.

fluence on EPI than an increase in current democracy. In the case of the presented regression, model 3 appears to be the best model because fixed effects models are more tangible than individual-effects models. Nevertheless, coefficients remain significant and the R-Square only slightly decreases. However, for the purpose of the study, model 4 was chosen for further regressions to erase the impact of Anocracies on environmental performance.

5.2. Cultural Differences in Environmental Engagement

The idea behind the second part of the analysis is to sort the data set by cultural groups following the global cultural map by political scientists Ronald Inglehart and Christian Welzel (2005). They claim that people's beliefs play a key role in economic development, the emergence and flourishing of democratic institutions, the rise of gender equality and the extent to which societies have effective governments. Following the global cultural map there are two major dimensions of cross-cultural variation: Traditional values versus Secular-rational values and Survival values versus Self-expression values. In this context, the Industrial Revolution was linked with a shift from traditional to secular-rational values (first dimensions of cross cultural variation), bringing the secularization of authority. In the post-industrial phase of modernization, another cultural change becomes dominant – a shift from survival values to self-expression values, which brings increasing emancipation from authority. Rising self-expression values transform modernisation into a process of human development that increases human freedom and choice. Self-expression values give high priority to freedom of expression, participation in decision-making, political activism, environmental protection, gender equality and tolerance of ethnic minorities. Survival values on the other hand give top priority to economic and physical security and conformist social norms. Dividing the used sample into the suggested nine cultural groups (Islamic, Africa, Latin America, English Speaking, Orthodox, Catholic Europe, Protestant Europe, Confucian and Africa) allows controlling for cultural differences in Environmental Performance.

In Table 2, Trade of GDP (in %), Foreign Direct Investments and GNI per capita growth (% annual) have been introduced as additional variables to complement the existing set of con-

trols. Furthermore, the cultural group Latin America was excluded from the table because, apart from Democratic Capital, coefficients were not significant. Regressions were only conducted with DemCap5 Capital Stock to show the pure effect of "Democratic Capital" and omit the effect of "Open Anocracies". Following the regression results, Democratic Capital has a significant positive impact on Environmental Performance in Islamic Countries, as well as in Catholic and Protestant Europe and a negative impact in Confucian countries. This finding provides empirical evidence that culture matters in terms of the relationship between democratic capital and environmental performance. Thus, the second purpose, if environmental performance is influenced by cultural differences can be confirmed. The finding is aligning with the key message of the two-dimensional global map by Inglehart and Welzel (2005). Accordingly, socioeconomic development produces two major dimensions of cross-cultural variation; one linked with the rise of industrialization and the other linked with the rise of post-industrial society. Both dimensions reflect changes in people's authority, which shifts from legitimized by traditional religious beliefs to being legitimized by secular-rational ones. Catholic and Protestant Europe are post-industrial cultures with high democratic capital stocks and extremely high self-expression values. The rise of self-expression values has changed the political agenda of post-industrial societies, challenging the emphasis on economic growth by an increasing concern for environmental protection. On the other hand, Confucian culture stands for extremely high secular rational values. Following the Emancipative Theory of Democracy (Inglehart and Welzel), secular beliefs and doctrines do not necessarily challenge unlimited political authority. By contrast, rising self-expression values bring emancipation from authority: people increasingly tend to reject external authority that encroaches on individual rights. On the other hand, Confucian societies emphasize survival values rather than self-expression values. This stands for relatively low levels of subjective well-being, relatively poor heath, little interpersonal trust and low support for gender equality. In these countries, materialist values are preferred; the population has relatively high levels of faith in science and technology and are relatively low on environmental activism and more favourable to authoritarian government.

Current Democracy has a positive impact on EPI in African and English speaking countries. This can be explained with the fact that democratic capital stock in African societies is the lowest in the sample. Therefore, the flow variable current democracy is more important than the stock itself, in contrary to European countries. The absence of significance of democratic capital in English speaking countries can be explained with the fact that there is no variability in the sample for this cultural group (all countries have the same value). Therefore, if variability is given in the stock variable, the impact will be captured, otherwise, like in this case, it is captured in the current democracy variable. The next variable under evaluation is Total Urban Population. Following literature, the process of urbanization engenders both positive and negative impacts. To a large degree, cities are formed because they provide cost advantages to producers and consumers, which are effects, associated with the general growth of concentrated regions (Todaro and Smith, 2003). Numerous studies have, confirmed the positive relationship between per capita income and urbanization levels (Fay and Opal, 2000; and Polese, 2005). Following the regression output, urban population has a positive impact on EPI in Islamic, African and Orthodox countries and a negative one in Protestant European. One possible interpretation for the positive impact in African countries is funding available for climate change adaptation (multilateral climate finance). This is because adaptation finance targets poor and vulnerable countries, particularly in South Asia and sub-Saharan Africa (ODI, 2014). In the culture Africa, Islamic and Orthodox, increasing urbanization might positively impact the EPI objective "Environmental Health", which stands for reducing environmental stresses on human health and includes the indicators: Child Mortality, Access to Sanitation and Access to Drinking Water. This improvement could outweigh negative impacts on the objective "Ecosystem Vitality"; Air, Water, Resources, etc., which promotes ecosystem vitality and sound natural resource management. Furthermore, literature suggests a positive impact of urbanization on environmental performance in the United States (Glaeser, Kahn (2008)). Even the United States is a developed country; this finding is not evident in this study in terms of Protestant Europe. One main argument for positive environmental impacts of urbanization in the US is the relationship between urban

sprawl and gasoline consumption. However, negative externalities of urbanization in Protestant Europe could be explained that cities have significantly lower emissions than suburban areas in the United States. This is because gasoline usage decreases with density and increases with distance from the city centre. The negative impact of urbanization in Protestant Europe could be that this urban sprawl is not given because land use patterns in Europe are denser than in the United States. Contrary to the development in African and Islamic countries it is also possible that the negative impacts on the objective "Ecosystem Vitality" can't be outweigh by improvements in "Environmental Health" because the development gap between urban and rural areas is not existing in Protestant European countries. The next control variable is Trade of GDP (in%). In this context, the debate is typically divided between the so-called optimists and pessimists who believe that trade as a driver of economic growth is either good or bad for the environment (Bhagwati, (1993), Daly (1993)). An increase in trade of GDP (in %) has a negative impact on EPI in English speaking and Confucian countries and a positive one if the culture is South Asian. In this context, there is evidence that trade openness may have beneficial effects on the environment. Neumayer (2002b) reports evidence suggesting that countries more open to foreign trade have a higher likelihood to ratify multilateral environmental agreements. On the other hand, the negative impact of trade in Confucian countries can be largely explained by the progressive export orientated development of China during the last two decades. In this context, less stringent regulation in developing countries leads to a comparative advantage in the production of pollution-intensive goods over developed countries (Cole, 2004). Linked to this, foreign direct investments affect the EPI negatively in African countries, which can be considered as evidence of leakage effects[2]. In this context, there has been a significant shift in the attitude towards foreign direct investment (FDI) to developing countries. FDI's are considered to be one of the major factors that may lead to environmental damage. In this context, the pollution-haven hypothesis argues that free trade, open markets, and increased foreign direct

[2] Following the Asian Development Bank, spill over/leakage effect has been identified as a channel through which a country benefits/is disadvantaged from foreign direct investment (FDI).

investment encourages the flow of polluting industries to developing nations, triggering an environmental "race to the bottom" (Park, Russell, & Lee, 2007). A further control variable is GNI per capita growth (% annual) that has a significant positive effect on EPI in Islamic countries and a significant negative one in South Asian and Confucian ones. In this context, the hypothesized relationship between environmental degradation and income per capita can be assumed, according the environmental Kuznets curve (EKC) (Ansuategi, A., Barbier, E. B., and Perrings, C. A., 1998). As mentioned earlier, literature suggests that degradation and pollution move in the same direction in the early stages of economic development, but beyond some level of income per capita the trend reverse. Consequently, economic growth leads to environmental improvement at high-income levels. This implies that the environmental impact indicator is a U-shaped function of income per capita. Data was presented that shows declines in various pollutants in developing countries over time. They show that because regulation of pollution increases with income, the greatest increases happen from low to middle income levels, which can be seen in South Asian countries. Further, market liberalization of developing economies over the last two decades has encouraged more efficient use of inputs and less subsidization of environmentally damaging activities. Following Inglehart and Welzel, freedom is a universal human aspiration, not taking a high priority when people grow up with the feeling that survival is uncertain. But when survival seems secure, increasing emphasis on self-expression values makes emerge of democracy increasingly likely where it does not yet exist (Islamic countries) and makes democracy increasingly effective where it already exists. Conversely, adopting democratic institutions does not automatically make self-expression values (environmental protection) people's top priority as it can be seen in Confucian countries and South Asian countries.

(Table 2)

Though literature suggests (Li and Reuveny (2006)) a positive effect of democracies in reducing CO2, the division into cultural groups provides further results. An increase in CO2 emissions per capita has a continuous negative impact on EPI in countries with either high self-expression values (English speaking, Protestant Europe) and those with high secular-

rational values (Orthodox and Confucian countries). The rapid development of East Asia and the subsequent democratization of South Korea and economic growth of China led to producing low-cost goods for the world market. The negative impact of an CO2 increase on environmental performance could be explained by Asia's offensive usage of nuclear power as well energy generation out of coal. The next control variable, Electric Consumption (kW/h), can be seen as a proxy for economic growth and presents an inextricably link between energy and environmental policies. All energy production and consumption has environmental impacts and in many regards energy and environmental objectives go hand in hand. Following the regression, an increase in electric consumption has a positive significant impact on EPI in Orthodox and Confucian and a negative one in English speaking countries. In the case of Orthodox and Confucian countries it is possible that this increase reduces environmental stresses on human health, especially in terms of Child Mortality, Access to Sanitation and Access to Drinking Water due to economic development and urbanization. In the case of English speaking countries, powerful fossil fuels lobby, especially in terms of the coal industry (Unites States, Australia) could be a major reason for negatively impacting the EPI objective "Ecosystem Vitality", especially the policy categories Air (Ecosystem Effect) and Climate Change & Energy. This is aligning with Dryzek (1987) who states that democracies are economic markets in which lobbying groups are very important. Therefore, multinational companies may have less incentive to introduce stricter environmental policies.

6. Robustness Analysis

Results from two different robustness tests are presented in the following course of the work. Firstly, a number of additional control variables were introduced in order to avoid omitted variable bias. Additional controls include a measure of governance readiness, human rights, female school enrolment and cars per 1000 population. Secondly, a regression with Dummies and Interaction terms (Democratic Capital * Cultural Dummy) was carried out to emphasize the pure effect of Democratic Capital Stock on the EPI, taking into account cultural differences. Moreover, a two-stage least squares IV regression was performed using

Democratic Capital (DemCap5) sorted by continents as an instrument. To test for a good instrument, the Sargan test was applied, which tests the validity of instrumental variables and over identifying restrictions. The hypothesis being tested with the Sargan test is that the instrumental variables are uncorrelated to some set of residuals, and therefore they are acceptable, healthy, instruments. The null hypothesis was statistically confirmed in this case, which means that the instrument passed the test. However, even in theory an appropriate instrument was found, it is necessary to test for endogeneity between DemCap5 and the error term, which would make the use of an IV necessary. In this context, the Hausman test was used to compare IV and OLS estimates and as a result there is no endogeneity between the DemCap5 and the error term. Therefore, the IV regressions are not presented in the scope of this work.

6.1. Further Control Variables

Good environmental results highly correlate with good governance: rule of law, anticorruption measures, robust policy dialogues and effective regulatory institutions. In the course of this analysis two measures from the World Bank's Worldwide Governance Indicators (WGI) were used - political stability and rule of law. WGI is derived from perceptions-based data, which reflect the views of a diverse range of informed stakeholders, including household and firm survey respondents as well as experts working for the private sector, nongovernmental organization and public sector agencies. Political stability was chosen because it affects the time horizon of politicians and thus their propensity to incur short-term cost in order to obtain long-term benefits (Bohn and Deacon, 2000; Fredriksson and Svensson, 2003). Furthermore, it fosters investment in "state capacity" (Besley and Persson, 2011), which in turn increases the provision of public goods. Secondly, Rule of Law was introduced as a further control. Rule of law has the potential to directly influence policy stringency by strengthening enforceability and government accountability. At the same time, rule of law promotes economic growth, which in turn has the potential to create greater demand for environmental quality. The concept of rule of law is measured by assessment of different

aspects of a country's legal development. It includes the protection of economic rights (i.e. property rights and intellectual property rights) and human rights, quality of contract enforcement, the likelihood of crime and violence, the quality and accessibility of the judicial system, law enforcement and respect for law in relations between citizens and administration. A further control is female school enrolment (World Bank 2014). In this context literature is suggesting that women's status in society, benefits granted, and access to resources provided by governmental agencies, can impact the well being of the environment and public health at the national level. Husted (2005) examined that higher levels of masculinity in a country are related to a lower social and institutional capacity for environmental sustainability. However, there is a marked scarcity of research in the literature on environmental performance of countries directly affecting human health and the link between women's social development and environmental health (Avinandan Mukherjee and Naz Onel 2014). If the influence of women capital on increasing economic growth, reducing poverty, enhancing societal welfare, and most importantly, ensuring sustainable development (OECD, 2008) is considered, it can be inferred that the will and ability to protect the environment and environmental health are influenced by the factors related to women's social development (Peng (2009)). As an alternative measure for economic growth, cars per 1000 population were introduced as a further control variable. Economic development has historically been strongly associated with an increase in the demand for transportation and particularly in the number of road vehicles. The conducted robustness tests confirm the benchmark results. Democratic Capital is statistically significant in all models. Among the added controls female school enrolment, rule of law and cars per 1000 population exhibits significant positive coefficients. Political Stability on the other hand is not significant which can be explained because Democratic Capital might already pick up a history of regime changes.

(Table 3)

6.2. Interaction Variable Analysis

Lastly, a regression with Interaction terms between democratic capital and binary Cult-Dummies (Democratic Capital * Cultural Dummy) was carried out. The intention is to provide further evidence in terms of the relationship between elements of democracy, culture and environmental sustainability. This robustness analyses allows for capturing the pure effect of democratic capital on environmental performance in different cultural groups. Even there are nine cultural groups of interest in the data set it is important to emphasize that only eight interaction terms were used in the regression because one culture (Protestant Europe) needs to be used as a reference group. The chosen model for the regression is the Fixed-Effect Model, presented in section 3.1.), in equation (2).

In this case β_1 is the regression coefficient for the variable of interest (Democratic Capital Stock) and shows how it impacts environmental performance (EPI) in the reference group (Protestant Europe). The regression coefficients ($\beta_2 - \beta_8$) of the interaction terms show how the effect changes in another culture, in comparison to the reference group. Both measures, Demcap0 and Demcap5, were used in the regression and Latin America has been removed from the regression table because it was not significant in both cases. Following the results, Democratic Capital has a significant impact on Environmental Performance if the culture is Protestant European, Africa, English Speaking, South Asia, Orthodox and Catholic Europe. Firstly, the impact of democratic capital on EPI in the reference group is positive. However, the regression output shows that democratic capital has a more positive impact on environmental performance if the culture is English speaking, South Asian, or Catholic Europe instead of Protestant Europe. On the other hand a smaller impact (compared to the reference group) if the cult is either Africa or Orthodox. This regression shows how democratic capital affects environmental performance in different cultures. Finally, the results provide further evidence that not only democratic capital but also the cultural values play a major role in environmental policy and stresses out the significance of culture in examining the relationship between democratic capital and environmental performance.

7. Conclusion

This paper argues that democratic capital (long-term historical experience with democracy) is an important determinant of environmental performance and that it might be possible that there are differences between cultural groups. The first conclusion, which can be drawn, is that higher levels of democratic capital stock are associated with better environmental performance (environmental policies). Secondly, the importance to distinguish between cultural groups can be underlined, following the regression results. Even Democratic Capital has the tendency to have a positive impact in the general regression; it loses significance or has a negative impact if only tested for a specific cultural group. One key finding is that FDI's in African cultures show a negative impact on EPI. Finally, it can be said that this study shows that even environmental degradation is a global problem; policies and environmental performance have to be tackled on a more individualized and culturally suitable level.

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Appendix I: Figures

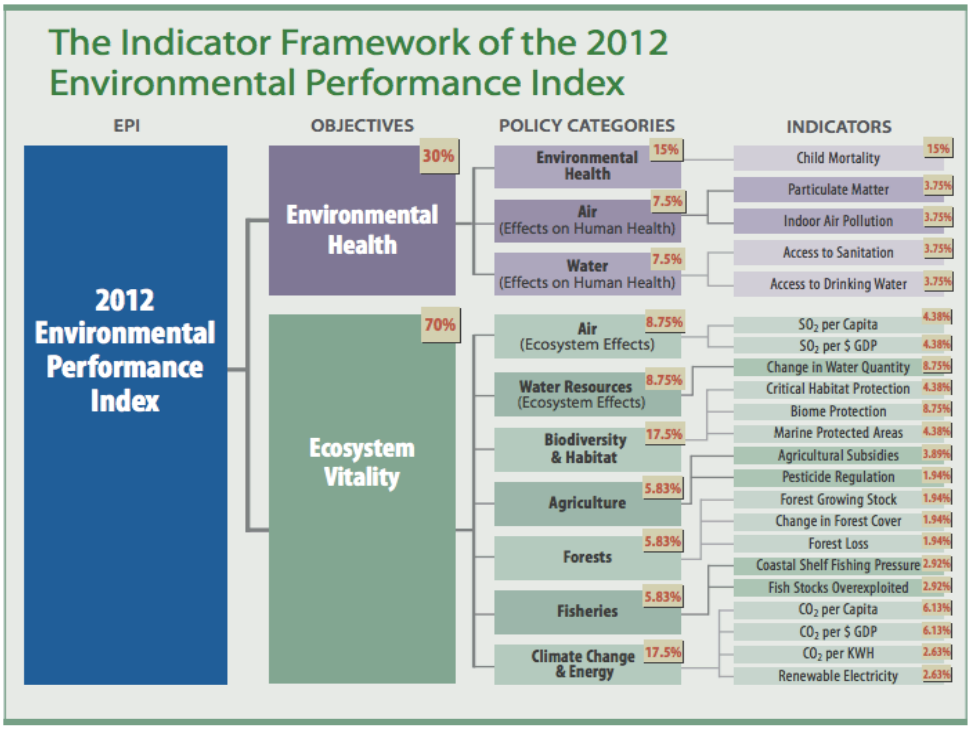

Figure 1: The 2014 EPI Framework includes 10 issues and 22 indicators.

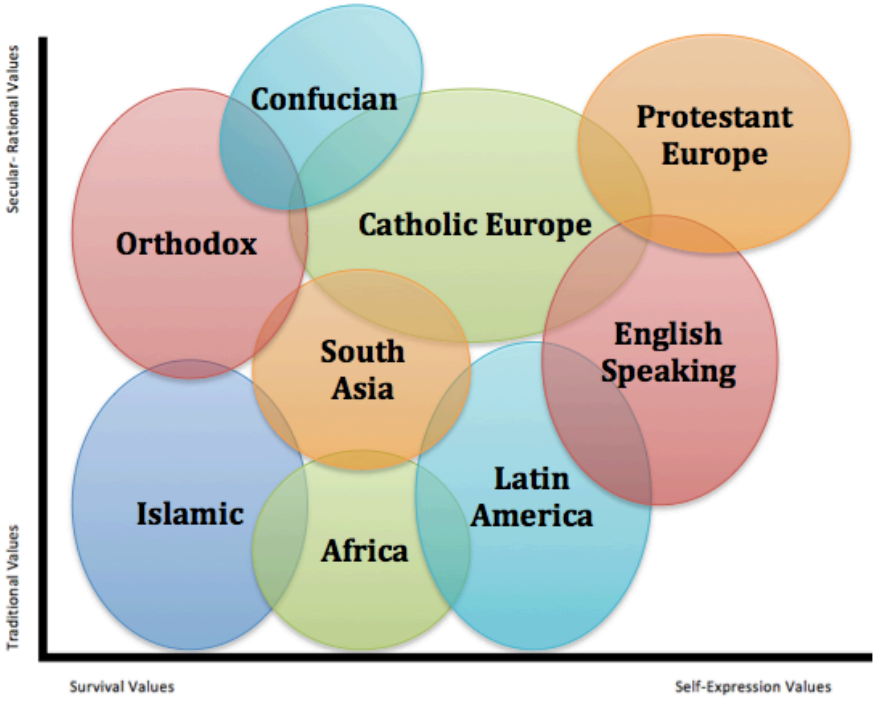

Figure 2: Cultural World Map following Ingelhart and Werzel.

	Islamic	Africa	Latin America	English Speaking	South Asia	Orthodox	Confucian	Catholic Europe	Protestant Europe
1	Albania	Angola	Argentina	Australia	Cambodia	Armenia	China	Belgium	Austria
2	Algeria	Benin	Bolivia	Canada	India	Belarus	Japan	Croatia	Czech Republic
3	Azerbaijan	Botswana	Brazil	Ireland	Malaysia	Bulgaria	Korea South	Cyprus	Denmark
4	Bangladesh	Cameroon	Chile	New Zealand	Myanmar	Georgia	Mongolia	France	Estonia
5	Egypt	Congo Brazzaville	Colombia	United Kingdom	Nepal	Macedonia	Singapore	Greece	Finland
6	Indonesia	Congo Kinshasa	Costa Rica	United States	Philippines	Moldova		Hungary	Germany
7	Iran	Eritrea	Cuba		Sri Lanka	Romania		Italy	Latvia
8	Iraq	Ethiopia	Dominican Rep		Thailand	Russia		Luxembourg	Lithuania
9	Jordan	Gabon	Ecuador		Vietnam	Ukraine		Poland	Netherlands
10	Kazakhstan	Ghana	El Salvador					Portugal	Norway
11	Kuwait	Ivory Coast	Guatemala					Slovak Republic	Sweden
12	Kyrgyzstan	Kenya	Haiti					Slovenia	Switzerland
13	Lebanon	Mozambique	Honduras					Spain	
14	Libya	Namibia	Jamaica						
15	Morocco	Nigeria	Mexico						
16	Oman	Senegal	Nicaragua						
17	Pakistan	South Africa	Panama						
18	Qatar	Tanzania	Paraguay						
19	Saudi Arabia	Togo	Peru						
20	Sudan	Zambia	Trinidad and Tobago						
21	Syria	Zimbabwe	Uruguay						
22	Tajikistan		Venezuela						
23	Tunisia								
24	Turkey								
25	Turkmenistan								
26	UAE								
27	Uzbekistan								
28	Yemen								

Figure 3: Cultural Groups following the cultural world map by Ronald Inglehart and Christian Welzel.

Table 1

Variables	1	2	3	4
Urban Population Total	.1069403***	.1192815***	.1523133*	.1716789**
	(.038529)	(.0396789)	(.0804291)	(.0783321)
CO2 emission pc	-.1561318 **	-.1461145**	-.1193946	-.1097641
	(.0761061)	(.0746948)	(.0783764)	(.0767002)
ElectriconsumptionkWh	.000548 ***	.0004511***	.0004412**	.0003537*
	(.0001614)	(.0001584)	(.0002119)	(.0002135)
Current Democracy	.0829299**	.1034869**	.050683	.0734537*
	(.0440331)	(.0422425)	(.0483867)	(.0434937)
Democratic Capital	.6118867***		.5690661***	
(polity2 > 0; 1987 - 2010)	(.0852177)		(.1058885)	
Democratic Capital		.6392439***		.6003733***
(polity2 > 5; 1987 - 2010)		(.0931341)		(.1127975)
Constant	39.67701	39.48085	37.75466	37.01714
Fixed Effects	No	No	Yes	Yes
Observations	1351	1340	1351	1340
R-squared	0.4598	0.4536	0.4220	0.4147

Robust standard errors in parentheses

*** $p < 0.01$.

** $p < 0.05$.

* $p < 0.1$.

Table 2

Variables	Islamic	Africa	English speaking	South Asia	Orthodox	Confucian	Catholic Europe	Protestant Europe
Urban Population Total	.3861288***	.3178105***	-.0189643	-.1469092	.3332908***	.2258564	.1712426	-.2753234***
	(.0789765)	(.0586031)	(.0809305)	(.1230941)	(.1249745)	(.1515201)	(.1678684)	(.0870964)
Trade of GDP (in %)	-.0038749	-.0127738	-.0629712***	.1613196**	.0406997	-.0388433***	.0034703	.0079405
	(.0117276)	(.0107012)	(.0219438)	(.0782925)	(.0275898)	(.0121564)	(.0139363)	(.0165719)
FDI	-.0118279	-.062457*	.0345655	-1.098613	.0978622	.0016125	-.0043639	.029248
	(.0264562)	(.0372591)	(.0321889)	(.7467747)	(.0618877)	(.0531875)	(.0055956)	(.0205798)
GNI pc growth (%annual)	.0929139***	.0089847	.0400731	-.7372664***	-.0212722	-.146543**	-.0021369	-.017247
	(.0300834)	(.0074397)	(.0318812)	(.2771466)	(.0283681)	(.0659648)	(.0249308)	(.0254812)
CO2 emission pc	-.008148	-.8891433	-.9831607***	-5.231805	-.8444061	-.6448109**	-.4176139	-.6910955***
	(.2268738)	(.8813996)	(.1447197)	(5.069323)	(.5285349)	(.2957628)	(.3756288)	(.1594174)
ElectriconsumptionkWh	-.0004722	.0005102	-4.55e-06	.0104632	.0015238	.0018975***	.0005886	.0003111***
	(.0007027)	(.0030946)	(.0001688)	(.0100999)	(.0012122)	(.0004705)	(.0004293)	(.0001118)
Current Democracy	.0934754*	.1159859**	6.815711***	.0641301	-.0488636	.4394734	-.2697231	-.254989
	(.0552838)	(.0506312)	(.4991848)	(.1959573)	(.2427565)	(.3221018)	(.3582205)	(.2365593)
Democratic Capital	.5896828***	.02621	.8791174	.1311553	.1440472	-.7594412***	.8689392***	.7484163***
(polity2 > 5; 1987 - 2010)	(.242844)	(.0598677)	(.461361)	(.2896695)	(.36822)	(.2646024)	(.2289088)	(.1742856)
Constant	22.39606	36.87417		45.59139	20.77191	23.45286	42.74584	82.78189
R-squared	0.0946	0.0945	0.8682	0.4832	0.6980	0.9725	0.0919	0.4287
Countries	24	20	6	8	8	5	13	12
Observations	217	208	66	86	87	49	138	132

Robust standard errors in parentheses

*** $p < 0.01$.

** $p < 0.05$.

* $p < 0.1$.

Table 3

Variables	1	2	3	4
Urban Population Total	.1080768***	.0820217*	.1028101***	.076406*
	(.0392045)	(.0480587)	(.0394053)	(.0422883)
CO2 emission pc	-.1495763 **	-.1646771*	-.1343768*	-.3381228***
	(.0757048)	(.1019708)	(.0791727)	(.0937222)
ElectriconsumptionkWh	.0004633***	.0002603	.0003699**	.0003179*
	(.0001571)	(.0001694)	(.0001576)	(.0001679)
Current Democracy	.078983**	.0885165	.0640507	.0962654*
	(.0412627)	(.0657051)	(.0435303)	(.0540167)
Political Stability and Absence of Violence/Terrorism	.0322192			
	(.2878854)			
Female School Enrollment		.0301487***		
		(.0101207)		
Rule of Law			.8831046*	
			(.4893498)	
Cars per 1000				.0123707***
				(.0035917)
Democratic Capital	.6299655 ***	.7104793***	.6281468***	.5941424***
(polity2 > 5; 1987 - 2010)	(.0942406)	(.105195)	(.0934785)	(.1100362)
Constant	40.27044	40.99704	40.94431	41.88546
R-squared	0.4630	0.4592	0.4835	0.5476
Countries	123	116	123	118
Observations	1208	957	1208	977

Robust standard errors in parentheses
*** p < 0.01.
** p < 0.05.
* p < 0.1.

Table 4

Variables	1	2
Democratic Capital	.5731414 ***	
(polity2 > 0; 1987 - 2010)	(.0553398)	
Democratic Capital		.7614449***
(polity2 > 5; 1987 - 2010)		(.0641367)
Africa	-.2142981**	-.4044121 ***
	(.1007434)	(.1112672)
English Speaking	.760004 ***	.5717005 ***
	(.2163732)	(.21409)
South Asia	.9147945***	1.451184***
	(.2153334)	(.2441633)
Orthodox	-.0932189	-.3700672***
	(.1481174)	(.1372115)
Confucian	.6294637 **	.3562438
	(.2741824)	(.2552468)
Catholic Europe	.5750925***	.3383378 ***
	(.1294314)	(.1266707)
Constant	45.28901	45.18922
R-squared	0.2140	0.2210
Countries	127	126
Fixed Effects	Yes	Yes
Observations	1408	1397

Standard errors in parentheses
*** $p < 0.01$.
** $p < 0.05$.
* $p < 0.1$.

Appendix III: Descriptive Statistics

Summary Statistics

Variable	Obs.	Mean	Std. Dev.	Min.	Max.
Environmental Performance Index	1408	50.98586	11.61532	0	77.99389
Democratic Capital (polity2>0)	3809	4.661839	4.514944	0	12.89166
Democratic Capital (polity2>5)	3785	3.941289	4.441884	0	12.89166
Current Democracy (polity2)	3770	2.371353	6.923187	-10	10
Trade of GDP (in %)	3593	79.85903	49.27624	.3088029	531.7374
Urban Population Total	3780	52.4968	23.49792	.3168262	100
Foreign Direct Investments	3426	3.463441	7.264319	-82.892	161.8238
CO2 emission pc	3654	4.567421	6.818449	-.0602412	68.53494
Electric Consumption kW/h	2958	3301.761	4209.913	0	25590.69
Female School Enrollment	2157	30.93974	27.80503	0	148.5266
Cars per 1000 Population	1145	186.5827	187.0695	-4.469459	673.3613
Rule of Law	1908	-.1919235	1.005908	-2.668873	1.99964
Political Stability	1908	-.2177678	.9723891	-3.323904	1.668068

Descriptive Statistic EPI CULT

Cult	Obs.	Mean	Std. Dev.	Min.	Max.
Islamic	307	42.52218	7.991544	25.21509	67.45668
Africa	231	47.62815	5.504649	33.66309	57.91183
Latin America	266	48.93145	16.19933	0	69.32506
English Speaking	66	59.30317	4.490266	54.27478	68.82269
South Asia	99	52.19439	7.398967	31.74784	69.92034
Orthodox	98	48.43678	4.401273	41.42331	57.34191
Confucian	55	51.74075	7.815196	41.23602	63.39843
Catholic Europe	143	61.29256	4.899527	51.64755	69.59319
Protestant Europe	132	65.73342	5.071766	55.62473	77.99389

Descriptive Statistic DemCap5 sorted by CULT

Cult	Obs.	Mean	Std. Dev.	Min.	Max.
Islamic	866	.9573637	2.507029	0	12.89166
Africa	873	2.015753	3.383073	0	12.89166
Latin America	598	6.447942	4.213764	0	12.89166
English Speaking	144	8.251275	3.552602	1	12.89166
South Asia	264	3.17513	4.318688	0	12.89166
Orthodox	212	4.937036	3.899843	0	11.83156
Confucian	144	3.615825	4.597184	0	12.89166
Catholic Europe	308	7.104118	4.049364	0	12.89166
Protestant Europe	280	7.771905	3.689466	0	12.89166

Descriptive Statistic Urban Population total (in %) sorted by CULT

Cult	Obs.	Mean	Std. Dev.	Min.	Max.
Islamic	869	53.46046	22.63738	.3168262	98.655
Africa	855	31.85492	14.64717	5.198	85.697
Latin America	600	60.91559	19.39755	8.534	94.414
English Speaking	144	77.84379	9.271816	56.546	88.733
South Asia	264	28.51484	13.78334	7.944	70.912
Orthodox	208	61.84033	8.802562	44.886	74.615
Confucian	144	68.88403	20.97339	24.259	100
Catholic Europe	312	67.97628	12.91653	46.342	97.641
Protestant Europe	288	74.48827	6.501161	65.646	87.061

Descriptive Statistic CO2 per capita sorted by CULT

Cult	Obs.	Mean	Std. Dev.	Min.	Max.
Islamic	836	6.379424	10.8558	-.0602412	68.53494
Africa	828	.5418726	1.061877	.0037499	10.58399
Latin America	600	2.787056	4.220624	.0390969	38.16113
English Speaking	144	13.30708	4.560093	6.917264	20.24919
South Asia	264	1.135993	1.654738	.0350276	7.809635
Orthodox	181	5.302515	3.282862	.4864546	14.39057
Confucian	144	7.229118	3.983052	2.038411	19.11902
Catholic Europe	297	8.410317	4.617284	3.144178	27.42196
Protestant Europe	264	8.542812	2.883003	2.636157	15.01156

Descriptive Statistic FDI (% GDP) sorted by CULT

Cult	Obs.	Mean	Std. Dev.	Min.	Max.
Islamic	746	3.620319	9.043302	-82.8921	91.00733
Africa	834	3.355992	8.602357	-8.589433	161.8238
Latin America	572	2.729063	4.744614	-55.2422	39.80923
English Speaking	144	3.784637	5.0603	-5.901953	26.20016
South Asia	223	2.529218	2.497436	-.1912754	11.93948
Orthodox	169	4.205939	4.56492	0	32.9472
Confucian	116	4.776845	6.299494	-.1061165	27.27942
Catholic Europe	261	4.317642	9.759927	-55.06554	76.32719
Protestant Europe	265	3.660605	4.331644	-6.6999	26.65321

Descriptive Statistic Electric Consumption kW/h sorted by CULT

Cult	Obs.	Mean	Std. Dev.	Min.	Max.
Islamic	683	2890.911	3842.798	4.466077	17444.04
Africa	448	329.3077	378.6433	18.64959	1616.784
Latin America	528	1250.094	988.9736	18.46314	5952.134
English Speaking	144	9818.082	4011.773	3414.634	17319.23
South Asia	208	624.1619	828.8295	13.37147	4135.581
Orthodox	194	3047.569	1333.536	0	6673.179
Confucian	144	3816.46	3048.652	426.5545	9744.393
Catholic Europe	306	5489.737	3165.906	1950.565	16833.91
Protestant Europe	279	8906.387	6070.072	1973.229	25590.69

Descriptive Statistic Polity 2 sorted by CULT

Cult	Obs.	Mean	Std. Dev.	Min.	Max.
Islamic	827	-3.621524	5.41124	-10	9
Africa	873	-.3596793	5.81747	-10	10
Latin America	624	6.139423	4.46367	-8	10
English Speaking	144	10	0	10	10
South Asia	263	.5893536	6.68816	-10	9
Orthodox	212	4.207547	4.89456	-8	9
Confucian	144	.8680556	7.934387	-10	10
Catholic Europe	308	8.642857	3.67433	-7	10
Protestant Europe	280	9.314286	2.20974	-7	10